Training Opportunity for Belgian Trainees

Reference	Title	Duty Station
BE-2017-SCI-FV(1)	**Mixed signal electronic design and test**	**ESTEC**

Overview of the unit's mission:

The Future Missions Department (SCI-F) is in charge of mission preparation activities (system definition studies Phases 0/A/B1 and technology developments) and of small missions implementation in the Science Directorate (D/SCI).The Payload Technology Validation Section (SCI-FV) in the Future Missions Department is in charge of specific mission oriented validation activities, for science missions, aiming at reducing development risks in the implementation phase. The section also provides general support to the Directorate's other Departments for specific validation activities, for missions under development or during operations (see http://sci.esa.int/sci-fv/57057-payload-technology-validation/).

One of the main activities of the section is to validate payload instrument detector and detector readout electronic performances.

Overview of the field of activity proposed:

The technology validation activities are currently focused on detectors and electronics, typically for astronomy mission payloads. The support provided by SCI-FV occurs at different phases of an ESA science mission:

- During the early precursor technology development (e.g. European Near-Infrared detection systems)
- In the assessment/definition phase (e.g. PLATO, SMILE)
- In the project implementation phase (e.g. Euclid and CHEOPS)
- In the mission operations phase (e.g. GAIA)

Each technology validation activity encompasses the following tasks:

- Definition of activity: interaction with the customer (e.g. study, project or operations team, or scientist) for requirements specification, test plan definition and implementation schedule
- Design of the validation setup (generally by tailoring existing set-ups to the need)
- Commissioning and characterization of the test set-up
- Execution of the tests according to the test plan,
- Data analysis in collaboration with other sections and reporting

The role of the trainee would be to support the sections activities on validating detector and detector readout electronic performances.

In support of this goal the main tasks (list not exhaustive) for the trainee would be:

- Design of analogue and digital electronics (including simulation and CAD)
- Manufacturing and test of electronic circuits
- Performing electronic system, components and electro-optical sensor characterisations in the sections laboratories
- Development of firmware and instrument control and readout software (on PC level in Python)
- Data analysis and report writing
- Participation in meetings, reviews, working groups

Required education:

Master's Degree in electronics engineering or equivalent with hands-on experience on mixed signal electronic design, breadboarding and test is required. Strong interest in low noise circuits is appreciated. Knowledge on opto-electronics and / or cryogenics would be an asset.